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COMMONWEALTH PHYTOPATHOLOGICAL NEWS

A QUARTERLY REVIEW OF NEWS AND VIEWS ISSUED BY THE COMMONWEALTH MYCOLOGICAL INSTITUTE, KEW, SURREY

"NEW" POTATO VIRUS Y

VEIN-BROWNING DISEASE OF TOBACCO

History

The disease was first observed in 1952 on tobacco in the experimental plots of the Institute for Tobacco Research, then at Biendorf-Wohlsdorf, Kothen district, E. Germany. It was found to be widespread in central Germany and to cause appreciable loss both in yield and quality. Its effects became more marked in later years and it has now been reported from other districts in Germany (including Schleswig Holstein), from Switzerland (RAM 39: 532), Hungary (RAM 39: 349), and Italy (RAM 40: 247). It has been detected in Brazil on potatoes imported from Germany (RAM 39: 239). The virus has been studied by Klinkowski & Schmelzer (RAM 36: 503; 37: 420; 39: 238; 40: 238), Kohler (RAM 34: 669), and Aubert (RAM 39: 126; 40: 430).

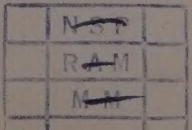
Symptoms

These apparently vary considerably with variety of tobacco, with season, and also in a somewhat unpredictable manner. Typical symptoms as developed on the tobacco cultivar Samsun are vein-clearing of the apical leaves 8-12 days after infection. A few days later grey-brown necroses appear on the mid-rib, petioles, and stems and there is a downward curling of the leaves. Necrosis spreads rather erratically to the veinlets. The leaves then dry up and the stem shews strong browning down to ground level, but remains erect with a tuft of unwilted leaves at its apex. The roots also turn brown. The symptoms are less pronounced in summer and sometimes a 'pearl-pattern' mosaic develops, similar to that shewn by normal strains of potato virus Y.

Seehofer, Thran, & Carstens (RAM 39: 349) state that infected leaves shew reduction of sugar and ash and increase in nicotine and albumin. When 60-70 per cent. of the plants are attacked, harvesting is unprofitable.

Etiology

Klinkowski & Schmelzer isolated a virus which could be transmitted by mechanical means or by Myzus persicae. Similar symptoms can be developed by a mixture of potato viruses X and Y, but transfer to Datura stramonium shewed the former to be absent. On several hosts (tomato, potato, Datura metel) symptoms were similar to those of normal potato virus Y, but on Petunia hybrida the reaction differed, various chlorotic symptoms and often necrosis occurring. Serologically the virus was identical with potato virus Y. Pre-infection with normal virus Y at the most only slightly protected against the present virus. It was concluded that it is a strain of potato virus Y, differing mainly in the development of necroses on the stem of tobacco. The typical form of Y virus produces vein clearing followed by banding on tobacco, but not necrosis. Some atypical



strains have been reported by others as producing vein necroses, e. g. Smith & Dennis (RAM 19: 425) in 1940, Nobrega & Silberschmidt (RAM 24: 430) in Brazil in 1944, Bawden & Kassanis (RAM 31: 201; 36: 175). Silberschmidt, Rostom, & Ulson (RAM 34: 264), Munro (RAM 35: 216) & Kovachevsky (Istwest. trol. inst. bulgar. akad. nauk. 1, 123, 1950). All these differed in the necroses being less strongly developed, either mere flecks or affecting the veins and not the mid-rib, and never produced on the stems. These have been referred to as 'tobacco vein necrosis', 'tobacco veinal necrosis', or 'necrose dao nervuras'. Klinkowski & Schmelzer propose the term 'Tabak rippenbraune-Virus', which may be translated as 'tobacco vein-browning virus', and the Latin trinomial Marmor upsilon Holmes var. costaenecans var. nov.

Klinkowski & Schmelzer have given a survey of the atypical strains of potato virus Y (RAM 40: 238).

De Montgremier & Grosclaude (RAM 40: 186) have reported a vein necrosis of tobacco in S.W. France due to a mixture of cucumber mosaic and potato virus X or tobacco mosaic virus. It is interesting to note that Klinkowski's first attempts at isolating a virus from the vein-browning disease yielded a mixture of potato virus Y and cucumber mosaic.

More recently, Schmelzer & Klinkowski (RAM 37: 420) have reported a new strain differing in its ability to attack tobacco varieties not attacked by the original, and in producing no symptoms on Petunia hybrida. Similar observations were made by Aubert (RAM 40: 430). He also reports (RAM 39: 126) that mild strains producing few or no necrotic lesions may arise from the usual strain of vein-browning virus. Szirmai (RAM 39: 349) states that the period of latency is longer than with typical potato virus Y.

Transmission

Klinkowski & Schmelzer report transmission by mechanical means and by Myzus persicae, but not by Cuscuta spp. Volk (RAM 40: 489) gives the following vectors, Myzus persicae, Macrosiphum euphorbiae, Aphis rhamni and Aphis frangulae. Klinkowski & Schmelzer (RAM 40: 238) found that where vein-browning virus is present together with potato virus Y strains not producing necrosis on tobacco the latter is preferentially transmitted by aphids. Aubert (RAM 40: 430) states the virus is not seed transmitted.

On potatoes, transmission can occur via the tubers as witness Silberschmidt's observation (RAM 39: 239) of its introduction into Brazil from Germany. Klinkowski (RAM 39: 238) mentions its occurrence in progeny of infected plants from Aubers and that the earlier these are harvested, the weaker are the symptoms in the progeny. A similar but more pronounced phenomenon occurs with the ordinary strains of potato virus Y.

There are numerous references to increased incidence of infection in the tobacco planted close to potatoes which provide a reservoir of infection; Schmelzer & Klinkowski (RAM 37: 420), Steiner (RAM 39: 349), Marcelli (RAM 40:247), Aubert (RAM 39: 242), and Volk (RAM 40: 489).

Hosts

Nicotiana: Clear cut symptoms were developed only on N. tabacum. Some species are resistant e. g. N. rustica (Enderman & Berger, RAM 37: 421), N. glauca, raimondii, & tomentosiformis (Bode, RAM 39: 242).

Virginian varieties of N. tabacum are particularly susceptible (Rave, RAM 39:242). Some varieties V. 20, Mont-Calme Brun, & Mont Calme Jaune resistant to the earlier strain are susceptible to the later one. Endemann & Berger (RAM 37:421), Bode Koelle & Rave (RAM 39:242), Berger & Muller (RAM 39:737) report the testing of a large number of varieties and of results from breeding work. Resistance is genetically determined.

Solanum tuberosum: This appears to be the natural reservoir of infection. Symptoms are similar to those of normal potato virus Y, but also are often milder or masked. (Klinkowski, RAM 39: 238, 36: 503) and reduction in yield is less.

Experimental hosts: Datura metel, Petunia hybrida, Lycopersicon esculentum (RAM 36: 503), Stellaria media (RAM 38: 503), Capsicum annuum (RAM 39: 349).

Physical Characteristics

Klinkowski & Schmelzer (RAM 36:503) give the following. Thermal inactivation, 62°C. after 10 minutes exposure; dilution end point, over 1:50,000; longevity in vitro, over 50 days at 21-23°C.; resistance to drying, over 50 days at 21-23°C.

Aubert (RAM 40: 430) gives: dilution end point, 1:1,000,000; longevity in vitro, 30-70 days; thermal inactivation, 60°C.

Effects of Environment

Klinkowski & Schmelzer (RAM 36: 503) note that symptoms are less marked in summer. Similarly Berger & Muller (RAM 39: 737) noted differences between summer and winter symptoms. Seehofer, Thran, & Carstens (RAM 39:349) say soil and climatic factors are predominant in determining the distribution and severity of the disease, which is most in moorland and less in heath, woodland, and high ground in that order. Koelle (RAM 40: 63) found low N and high P increased severity of attack. Heavy virus attack was correlated with decreased formation of sclerotia of [?] Sclerotinia sclerotiorum. Volk (RAM 40: 489) states that the extent and rapidity of infection of tobacco fields depends on the incidence of aphid vectors.

R.W.R.

FAO SEEKS

TO PRESERVE "DISAPPEARING" PLANTS

The preservation of primitive forms of cultivated plants and wild species which are gradually dying out was discussed at a technical meeting on Plant Exploration and Introduction held in July at the headquarters of FAO in Rome.

"We must accept the responsibility we have to the present and the future generations to keep intact — as a wonderful treasure — the wild genetic variability of our cultivated plants and relative species, as a basic material to build up improved varieties and to get better and still better crops" said Dr. Vallega, Director of FAO's Plant Production and Protection Division.

An attempt is to be made to promote international action to prevent these plants from disappearing, as the primitive forms of maize in the United States and local European varieties of wheat, oats and barley have vanished.

Approximately 70 representatives from 30 countries attended the meeting. Its main purpose is to ensure that full use is made, through international as well as national effort, of the genetic resources of all important crop plants, including food crops, industrial crops, horticultural crops, and pasture and fodder crops. Many of these primitive plants were in danger of dying out through the increasing destruction of natural vegetation and the advance of improved varieties into remote corners of the world.

The needs of tropical Africa in the matter of regional introduction stations were particularly stressed at the meeting.

Delegates elected Mr. William Hartley, of Australia as chairman of the meeting. Mr. Hartley is principal plant production officer of the Commonwealth Scientific and Industrial Research Organization in Canberra. Dr. Ewort Aberg of Sweden, and Professor Frederice Brieger of Brazil, were elected vice-charimen.

Mr. Hartley said one of the aims of the current meeting would be to review the basis of plant introduction and exploration work and relate it to the fundamental sciences. He also reminded delegates of the importance of the meeting in connection with the FAO-sponsored World Seed Year.

SURVIVAL OF BACTERIAL PATHOGENS ON HERBARIUM SPECIMENS

A.C. Hayward
Commonwealth Mycological Institute

Recent work at this Institute has drawn attention to the capacity for survival of many bacterial pathogens on dried herbarium specimens. There is surprisingly-little information in the literature on this subject although the transmission of bacterial pathogens in or on seed or other planting material is well known (Crosse, 1957). The subject is relevant to the general study of the non-pathogenic survival of such bacteria in nature.

There are reports in the literature of the survival of bacterial pathogens for considerable periods in seed. For example, Burkholder (1945) observed that the bean wilt pathogen, Corynebacterium flaccumfaciens, remained viable and virulent for more than 20 years inside infected seeds. Similarly, Graham (1953) showed that the leaf pustule pathogen of soybean, Xanthomonas phaseoli f. sp. sojense, could be detected in seed 6, 18, and 30 months after harvest. Two other pathogens of soybean, Pseudomonas tabaci and P. glycinea, were less resistant and could be detected at 6 months but not at 18 months from harvest. Bryan & McWhorter (1930) in their original study of the pathogen of shirley poppy, Xanthomonas papavericola, were able to isolate the bacterium from herbarium specimens retained dry at room temperature for 20 months, and to prove the pathogenicity of the reisolate. There is perhaps more information on non-pathogenic survival of Xanthomonas malvacearum, the cause of bacterial blight of cotton, than for any other bacterial pathogen. and Ark (1958) recovered in culture, and proved the infectivity, of X. malvacearum from cotton leaves stored dry in paper bags for 6 years at room temperature. However, for the majority of bacterial pathogens there are no data in the literature, although there is much indirect evidence of survival in the field from observation of the carry over of infection from year to year. In some cases capacity for survival may have been underestimated.

Some observations on the survival of bacterial pathogens on dry herbarium specimens are given in the adjoining table. The bacteria were isolated, usually in considerable numbers, from non-surface sterilised material teased apart in 5 ml. of sterile water followed by conventional plating out on a non-selective 2 per cent. glucose or glycerol/peptone agar medium. Although saprophytic fungi and bacteria often grew profusely, after 3-4 days at 28°C. the pathogens could readily be selected from among the well separated colonies.

None of the bacterial pathogens of plants produce spores and the mechanism of the evidently high dessication resistance of many of them remains poorly understood. It is likely, however, that the mucoid extracellular slime formed by almost all Xanthomonas spp. in artificial culture on media high in utilisable carbohydrate, may have a protective function. There is no reason to doubt that the survival of many Xanthomonas spp. on dry leaves is as great as it has been reported to be for X. malvacearum. The survival of xanthomonads is known in some cases to be markedly greater than that of Pseudomonas spp. as shown by Graham (1953) for the bacterial pathogens of soybean.

Summary

Many bacterial pathogens can survive and remain infective on seed or other plant material, in soil, on insect vectors, on alternate hosts, or even on dried herbarium specimens, but for most bacterial pathogens there is little published information and a lack of quantitative data on survival rates. The collection of bacterial leaf spot or blight disease specimens for examination in the diagnostic laboratory is a practicable proposition where previously this had been considered doubtful, and it seems that in many cases specimens received up to 2 years after collection will be adequate for isolation of the pathogen, although freshly collected specimens are preferred whenever these can be obtained.

Bacterium	Source	I.M.I. No.	Country of Origin	Period in Months from Collection to Isolation
Xanthomonas phaseoli f. sp. sojense	Bacterial leaf pustule of soybean (Glycine max)	B518	Northern Rhodesia	16
Pseudomonas stizolobii	Leaf spot of velvet bean (Mucuna aterrima)	B520	Northern Rhodesia	13
Xanthomonas ricini	Leaf spot of castor (Ricinus communis)	B651	Ethiopia	10
Xanthomonas sp.	Stem canker of plantain (Plantago lanceolata)	B652	Ethiopia	11
Xanthomonas holcicola	Leaf streak of grain sorghum (Sorghum vulgare)	B657	Ethiopia	21
Pseudomonas phaseolicola	Halo blight of bean (Phaseolus vulgaris)	B660	Ethiopia	12
Pseudomonas helianthi	Leaf spot of sunflower (Helianthus annuus)	B664	Ethiopia	10
Xanthomonas phaseoli var. fuscans	Bacterial blight of bean (Phaseolus vulgaris)	B665	Ethiopia	23
Pseudomonas syringae	Leaf spot of pearl millet (Pennisetum glaucum)	B667	Ethiopia	12

The specimens originating in Ethiopia were collected by R. B. Stewart and those in Northern Rhodesia by A. Angus.

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(continued from p. 56)

Dr. G.E.C. Herklots, lately principal of I.C.T.A., has been appointed scientific adviser to the Government of Nepal.

Dr. P.N. Wilson has been appointed professor of Agriculture at I.C.T.A. in succession to Professor C.C. Webster who has been chosen as Director of the Rubber Research Institute of Malaya.

Dr. S. Willmott, acting director, Commonwealth Bureau of Helminthology, has been appointed as director.

Dr. F.T. Last, of Rothamsted Experimental Station, has been appointed as Head of the Department of Mycology and Bacteriology at the Glasshouse Crops Research Institute, Rustington, Sussex, in succession to Mr. P.H. Williams, who is retiring after 38 years' service, firstly at the Experimental and Research Station at Cheshunt and latterly at the Institute.

Awards

Dr. C.E. Foister, director, Scientific Services, Department of Agriculture and Fisheries, Scotland, has received the Neill Prize, the premier award of the Royal Caledonian Horticultural Society.

Professor C.W. Wardlaw, of the University of Manchester, has been elected an honorary foreign associate of the Royal Academy of Belgium (Section of Natural Sciences).

Association of Applied Biologists

The following officers were elected in July

Hon. President: G. Sykes
Hon. Secretary: Dr. Ella M. Barnes
Hon. Treasurer: G. Elis Jones
Hon. Editors: Drs. S.E. Jacobs and D.J. Jayne-Williams
Committee: B.M. Gibbs, Dr. N.D. Harris, Dr. Agnes A. Nichols, Dr. J.R. Novris, Dr. A.M. Paton, Dr. Patricia M. Scholes, Dr. A. Seaman, Dr. Joan Taylor, Dr. G.C. Ware.

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FROM NEAR AND FAR

F.A.O. reports that Dr. O.A. Reinking has recently investigated a disease of coconuts in Guam which has been causing a gradual decline in the production of palms there. Extensive investigations carried out during February and March 1961 in all parts of the island indicate that the trouble is caused by a disease identical with or very similar to the infectious yellow mottle decline (cadang cadang) disease of the Philippines. This is the first record of such a disease outside the Philippines.

The condition is widespread in all parts of Guam, causing up to 100 per cent. infection in many areas. There is some evidence that the disease, which is presumed to be of virus origin, can be spread through the planting of diseased seedlings. Symptoms usually appear only on older plants but infected palms of four to eight years of age have been observed.

According to the Times of 6 September the Ministry of Agriculture did not then know whether the efforts made to stamp out fire blight of fruit trees were succeeding. Fewer trees were throught to be infected this year but the disease had been reported from Cambridgeshire and north London.

On 3 July the Minister of Agriculture announced in the Commons a voluntary agreement on the use of toxic chemicals in seed dressings. Dieldrin, aldrin, and heptachlor which have caused widespread deaths of birds will not be used for spring sown wheat and will only be used for autumn and winter sowings when there is real danger of attack by wheat bulb fly.

A 'British Insecticide & Fungicide Conference' is being organized by the Association of British Manufacturers of Agricultural Chemicals (secretary Mr. W.A. Williams of that association, Cecil Chambers, 86 Strand, London, W.C.2) at the Grand Hotel, Brighton, during 6-9 November, 1961. There will be eleven sessions covering a wide range of insect and disease control, including that of nematodes.

According to a report of the National Council for Technical Awards nearly 5,000 students are taking courses for the diploma in technology. Last year the number was 3,800. The great majority are working in industry, many following the popular 'sandwich' courses. About one third are studying subjects other than engineering, a notable increase occurring in those studying biology. The diploma is now accepted as being equivalent to a university honours degree for entry to the U.K. Scientific Civil Service.

Publications of Interest

ARE YOU YOUR GARDEN'S WORST PEST? (305 pp., illustrated, Doubleday & Co. Inc., N. York, 1961; $4.50) asks CYNTHIA WESTCOTT, 'The Plant Doctor', who offers in popular form much useful information on the control of diseases and pests of ornamental plants, including an appendix on State and Federal Domestic plant quarantines in the United States.

Oliver & Boyd Ltd., Edinburgh have announced for publication in October of the first number of HORTICULTURAL RESEARCH a new journal for research papers in horticultural plants and practices. The editors are Dr. C.A. Wood, Pomology Dept, Scottish Horticultural Research Institute, Dundee, and Professor W.W. Fletcher of the West of Scotland Agricultural College, Glasgow. One volume is to be issued each year. Price 25s.

The POTATO GROWERS HANDBOOK by D.G. HESSAYON & P.G. FENEMORE; published by Pan Britannica Industries Ltd. & Charles Lennig & Co. (G.B.) Ltd. at 3s. 6d. gives much about potatoes which will interest others besides the 77,000 registered potato growers in Britain.

PERSONAL NEWS

C. M. I. News

The director in company with Mr. E.O. Pearson, director of the Commonwealth Institute of Entomology will attend the sixth meeting of the Inter-African Phytosanitary Commission to be held in Ibadan, Nigeria in October. They will also visit research centres in Nigeria and Ghana.

Mr. K.A. Pirozynski B.Sc. has been established as an assistant mycologist. He is specializing in leaf ascomycetes.

Dr. B.E.J. Wheeler of the Pool of Plant Pathologists has now been appointed lecturer in plant pathology at Imperial College of Science & Technology, London.

C.L.A. Leakey has been appointed to the Pool of Plant Pathologists and took up his duties in Uganda in September. He will investigate the blister disease of robusta coffee berries which is causing increasing losses in that territory. He will also investigate bean diseases.

Visitors

Among overseas visitors have been: Dr. H. Andersen, Plant Protection Service, Denmark; R. Antoine, Mauritius Sugar Industry Research Institute; Miss D.B. Buckley, New York; D.A. Burdekin, Tanganyika; Prof. A. Graniti, University of Bari, Italy; Prof. H. Hashioka, Gifu University, Japan; Prof. Maheshwari, Delhi; T. McKnight, Queensland; R.A. Robinson, Kenya; Prof. W.E. Sackston, Canada; W. Wheeler, U.S. Dept Agriculture, Washington; Dr. G.M. Wickens, Tanganyika; T.H. Williams, North Borneo.

Mr. D.R.W. Watson spent July and August studying in the herbarium before going to Tanganyika.

A party of senior biologists from Emanuel School visited the Institute in July.

Appointments, Promotions, Retirements, etc.

The Overseas Division of the Colonial Office announce the following: R.B. Conant, plant breeder, Kenya; G.E. Dixon, senior plant breeder, Kenya; D.J. Parsons, senior director of agriculture, Uganda; H. Paul, assistant director of agriculture (research), British Guiana; W.J.A. Payne, deputy director, East African Agriculture and Forestry Research Organization; W.T.H. Peregrine, plant pathologist, Tanganyika.

Dr. P.S. Wellington has been appointed assistant director of the National Institute of Agricultural Botany, Cambridge, to fill the vacancy caused by the death of G.W.G. Briggs.

(continued on p. 54)

OBITUARIES

Dr. H.T. Güssow, so well known for his work in developing the Canada Department of Agriculture, died in June last at the age of 82. His memory lives on in the flourishing Department of to-day.

Two other well known personalities who have left their mark on the plant pathology of to-day have also passed on. They are Tjeng Hiang Thung whose name will always be associated with black shank and virus diseases of tobacco and with Pseudomonas solanacearum in the then Dutch East Indies, and Professor H.M. Quanjer, a pioneer of virus disease work in potatoes in Europe.

OVERSEAS NEWS

CANADA

DODINE AGAINST APPLE SCAB IN NOVA SCOTIA

Apple scab fungicide tests with dodine (N-dodecylguanidine acetate, 65 per cent.) have been carried out at Kentville, Nova Scotia, for the past four years. During this time it has proved to be an excellent fungicide for scab control, but occasionally somewhat phytotoxic.

In 1957, dodine was tested at the rate of 1 lb per 100 Imperial gal. in protectant and eradicant, or post-infection, schedules. It gave excellent control of scab in both schedules and was non-phytotoxic to the six apple varieties in the test. Fruit finish was comparable to that obtained with captan. Similar tests were carried out in 1958 with dodine at $\frac{3}{4}$ lb per 100 gal. A June frost completely destroyed the apple crop so that scab records for that year were available only on the foliage. Again dodine gave excellent control of scab in both schedules.

Weather conditions in 1959 were ideal for testing apple scab fungicides and it was possible to obtain data on the control of early scab, late-season scab, and storage scab. Dodine was tested at rates of $\frac{3}{4}$ and $\frac{1}{2}$ lb per 100 gal. in a regular protectant schedule of eight sprays and at the $\frac{3}{4}$ lb rate in a schedule where the sprays were applied about 12 days apart. Dodine, at the $\frac{3}{4}$ lb rate in the regular schedule, gave much better control of early scab than captan. At the $\frac{1}{2}$ lb rate and in the 12-day schedule the control was equal to or better than with the standard captan. Less than one per cent. late-season fruit scab developed on any of the apples from the dodine plots, whereas, with captan there was about four per cent. of this type of scab. Dodine, at $\frac{3}{4}$ lb, in both schedules gave excellent control of storage scab, whereas, a regular schedule of captan failed to control this phase of the disease. The $\frac{1}{2}$ lb rate of dodine was somewhat less effective than the $\frac{3}{4}$ lb rate. Injury to the fruit in this particular test with dodine was negligible, but in another experiment on McIntosh apples in 1959, where dodine was being applied at the $\frac{3}{4}$ lb rate with a blower sprayer at $\times$ 2 concentration, 2.9 per cent. of the fruit was severely injured. The injury, which was first observed on July 15, was in the form of light-brown, burned areas mottled with green and with definite margins, but often irregular in outline as though a spray drop had dried and caused a burn. These lesions varied in size from $\frac{1}{8}$ to $\frac{1}{2}$ in. in diameter, and as the fruit expanded cracking occurred. At harvest the lesions consisted of deep, rough, corky areas.

Further tests with dodine were made in 1960 but scab was not too difficult to control. Dodine at the $\frac{3}{4}$ lb rate in both a regular and 12-day schedule again gave excellent control. A $\frac{1}{4}$ lb rate was too low for good scab control and a $\frac{1}{2}$ lb rate was satisfactory on the variety Cortland, but not on McIntosh. A mixture of dodine, at a $\frac{1}{4}$ lb rate, and glyodin, at half the normal concentration, gave excellent control and looks very promising. It was more effective than a mixture of captan and glyodin.

In Nova Scotia, dodine has been used by commercial growers both as an eradicant and a protectant fungicide with generally very satisfactory results. Fruit injury of a minor nature has been reported on the varieties, Ribston, Golden Russett, and Gano.

Plant Pathologist, R. G. Ross
Canada Agriculture Research Station,
Kentville, N. S.

NEW SOUTH WALES

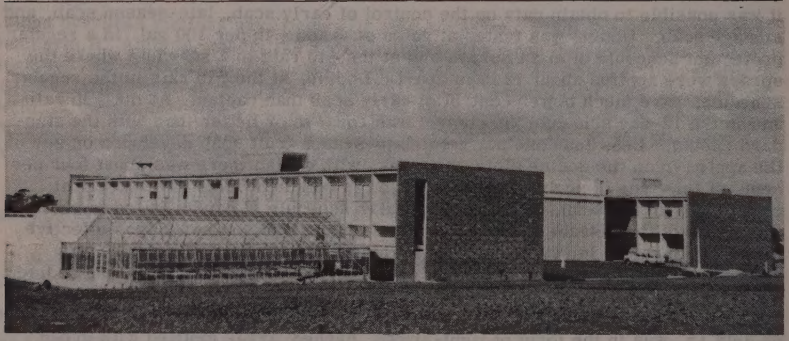
Aerial Dispersal of Conidia of Spilocaea pomi

Continuing his studies on apple scab Mr. K. E. Hutton, plant pathologist, reports that, using a Hirst spore trap set 2 metres above ground and well clear of the trees in a heavily scabbed apple orchard at Orange, N. S. W. in spring and early summer 1960, substantial numbers of conidia of Spilocaea pomi were trapped.

The trap was operated only during and shortly after rain to assess ascospore flights and unfortunately this reduced the amount of information which might have been obtained on dispersal of conidia.

From the limited measurements made it appeared that conidial dispersal occurred mainly during the daytime but low numbers of conidia were also trapped on some nights. There was a tendency for the numbers of conidia trapped to increase soon after rain had ceased.

The first ascospore infection period occurred on 18th September and the first conidium was trapped on 10th October. The numbers of conidia trapped during November and December were consistently substantial. The highest recording made was 298 conidia per cubic metre of air from 10 a. m. to 12 noon on 12th November.



New Laboratories for the Division of Science Services of the N. S. W. Department of Agriculture which were officially opened on the 28th July. The ground floor of the northern wing (foreground), together with library, herbarium, glasshouse and plot space, has been provided for plant pathology.

"Witches Broom" type abnormality in Potatoes

Mr. R. J. Conroy, plant pathologist, draws attention to a condition found in eight crops of Sebago potatoes on the Central Tablelands of New South Wales during the 1960/61 season. Affected plants were smaller than normal and had up to 25 individual stems which were often rounded instead of being of triangular configuration. The leaves were also smaller than normal, though not simple, and there was a rosetting of top growth and the production of numerous small tubers. Of the crops affected, 2 contained 70-80 per cent. of this type of plant, 3 contained 30 per cent. and 3 less than 1 per cent.

The abnormality differs from the Witches Broom disease of Hungerford and Dana (vide K. M. Smith "Textbook of Plant Virus Diseases, 1957" pp. 401-405) in that there is no marginal flavescence of leaflets, no production of aerial tubers, no elongation of top growth and no phloem necrosis in the lower stem.

The abnormality has been shown to be tuber transmitted but its etiology has not yet been elucidated.

Australian Plant Pathology Conference

The third Australian Plant Pathology Conference will be held at the Waite Research Institute, Adelaide, South Australia during 16th-20th October and will be

attended by delegates from Departments of Agriculture of all States, Universities and some Commonwealth Departments. Visiting scientists at the Conference will include Dr. Kenneth F. Baker of the University of California and Dr. A. F. Posnette of East Malling.

C. J. Magee

INDIA

Bacterial Blight of Sesamum

During the years 1957 and 1958 the sesamum crop in the experimental area of the Indian Agricultural Research Institute was found affected with a bacterial disease caused by Xanthomonas sp. The disease is characterized by small circular spots on leaves and stem, which later coalesce to form irregular patches. The blighted plants are a total loss as far as yield is concerned. This disease has not been recorded from India before.

Rind disease of sugarcane

In Bodhan factory area (Andhra Pradesh, South India) rind disease was found to cause wilting of the canes of variety Co. 419. Both healthy as well as diseased canes were observed in the same clump. The pathogenicity of the fungus isolated from diseased plants identified as Melanconium sacchari (= Pleocyta sacchari (Massee) Petrak & Sydow), was established on standing canes under experimental conditions.

Maize rust (Puccinia sorghi)

The disease occurs in cooler regions and is quite widespread. Outside India, Oxalis corniculata is known to act as an alternate host of this fungus. In India, natural infection of Oxalis species has not been observed so far, but in a glasshouse, plants raised from Oxalis corniculata seed became infected. Lately, during a visit to Nepal, natural infection of Oxalis sp. has been observed there by Misra.

Indian Agricultural Research Institute, R. S. Vasudeva
New Delhi

NIGERIA

Leaf gall of Sorghum

Since the note in COMMONWEALTH PHYTOPATHOLOGICAL NEWS (Vol. 4, p. 61, 1958) was written, leaf gall has been recorded from several other parts of the Northern Region but the infections have been so slight that it appears to be a very minor disease of guineacorn and of no economic importance. No such disease has ever been recorded from sugarcane in Nigeria.

In addition to Samaru, where a few plants with leaf gall have been noted every season since 1957, leaf gall has been recorded from the following localities -

Shika, Zaria Province, 1956, 1958
Karau-Karau, Zaria Province, 1958
Lowland Farm, Plateau Province, 1958
Maigana, Zaria Province, 1958
Osara, Kabba Province, 1958
Kontagora, Niger Province, 1958 (coll. Mr. Curtis)
Chum, Plateau Province, 1959 (coll. Mr. Bailey)

Except in the case of Shika in 1958 these are records of single plants. Leaf gall appears to be widespread in Northern Nigeria and is probably endemic here.

In 1959, attempts were made to transmit leaf gall to guinea-corn seedlings by adults of Locris sp. (Cercopidae), which feed regularly on guineacorn and seemed a likely transmitter, but no suitable insectary was available and the experiments were discontinued.

In November, 1958, I found similar symptoms on a single plant of Andropogon gayanus at Shika. The galls are very small but appear to be of the same structure as those on guineacorn. This is possibly a wild host for the leaf gall disease and if confirmed would strengthen the suggestion that the disease is endemic here.

Short Kaura appears to be the variety of guineacorn most susceptible to leaf gall and the description of the symptoms given in C.P. NEWS was from Short Kaura. Tall varieties with leaf gall develop numerous small branches bearing sterile heads on the upper part of the stalk in place of the single incompletely emerging head on infected Short Kaura; otherwise the symptoms are identical.

The heaviest leaf gall infection I have found was in a Short Kaura crop at Shika in 1958 when a total of 13 stands were affected in five 1/40th acre plots. This represents about 2 per cent. of stands infected and, since only one of the two or three bearing stems in each stand was affected, a loss in yield of less than 1 per cent.

Samaru E. Harris

IVORY COAST

BANANA CONGRESS

At the First International Reunion on Banana Production, held at Abidjan, Ivory Coast, 12-19 October, 1960, the question of diseases was introduced by D.C. Dunlap, who spoke on Panama disease (Fusarium oxysporum f. cubense) and Sigatoka (Mycosphaerella musicola). The same speaker introduced a paper by R.H. STOVER on banana diseases in Central and South America, where the principal aim is to prevent the introduction of Panama disease and Moko disease (Pseudomonas solanacearum) into areas newly brought under cultivation.

The discussion that followed dealt mainly with Sigatoka control. Stover expressed the view that in Central America mineral oil does not have a preventive effect and applied at 15 l./ha. reduces yields after a year or two. D. Tollenaar agreed that mineral oil is not a long-term preventive and reduces yields, but stated that in Ecuador these effects had not been very noticeable. On the other hand, according to J. Brun, in French Guinea mineral oil does act preventively and for long periods.

The proceedings concluded with remarks by B.E.V. Parham (Samoa) on the control of bunchy top (virus).

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A Correction

The note on Stem-pitting in Coffee in C.P. NEWS, 7, 1, pp. 10-11, 1961 was based on Dr. Sheffield's note in Records of Research 1959 pp. 46-48, 1960. The findings summarized on pp. 9-10 of the Guide to the Coffee Research Station, Ruiru, prepared for Planters' Day 1960 were by the Plant Pathologist, Mr. I.D. Firman.

NOTES ON TOBACCO ANTHRACNOSE

by R. W. Rayner

Leaf spotting of tobacco caused by fungi belonging to the genera Colletotrichum or Gloeosporium have been reported from a wide range of countries and the organism or organisms concerned have received a number of different names: C. nicotianae Averna Sacca, C. tabacum Böning, C. destructivum O'Gara and G. tabacum Böning. Recently Cronin (RAM 39: 46) has considered these all to be synonymous. If this is so, it would appear that C. destructivum O'Gara has precedence. It was originally described on legumes.

However, the taxonomy is hopelessly confused and can only be sorted out by first looking at original material of the species involved and then critically examining the literature in which it is suggested that C. destructivum and C. tabacum are the same, based on cross inoculation tests.

The C.M.I. is endeavouring to borrow type material of species involved for this purpose.

Geographical Distribution

The disease is of world-wide distribution, though there appears to be only one report from Europe (Germany) and one from Australia. It has only been reported as serious in certain states of the U.S.A., in Nyasaland and the Rhodesias in Africa, and in Japan. It has been reported from the following countries:-

Africa [Mauritius (RAM 38: 373) Nyasaland (RAM 38: 656) Rhodesia, Northern (RAM 33: 411; 34: 188) Rhodesia, Southern (RAM 35: 48, 92) Tanganyika (RAM 38: 382)], Asia [Formosa (RAM 26: 422) India (Herb. IMI No. 50187) Japan (RAM 36: 51) Korea (see Lucas t.b.)], Australasia [Australasia (Pamphlet C.S.I.R. Aust. 14)], Europe [Germany (RAM 11: 753)], North America [U.S.A., Kentucky, Virginia, Maryland, Virginia, Pennsylvania, North Carolina], and South America [Brazil (BUL. AGR. SAO PAULO. 23. 201 (1922)].

Host Range

Morgan (PLANT DIS. REPTR. 30: 908 (1956)) infected the following plants in greenhouse inoculations in Maryland, U.S.A. He also found the disease occurring naturally on those marked with an asterisk:-

Grasses: Agrostis alba, Bromus inermis, Lolium perenne, Sorghum vulgare Legumes: Medicago sativa, Pisum sativum, Glycine max, Trifolium pratense, Trifolium repens. Miscellaneous: *Lycopersicum esculentum, *Datura stramonium, *Capsicum annuum, Solanum tuberosum, *Lactuca sativa, Lactuca canadensis, Helianthus annuus, Beta vulgaris, Begonia sp., Cucumis sativus, Pelargonium sp., Coleus sp.

Evidence of inoculum coming from wild plants has also been obtained (Johnson & Valleau, KENTUCKY AGR. EXP. STA BULL. 362, 1936).

Debbagh (RAM 37: 313) found that anthracnose on Korean Lespedeza and Medicago lupulina could infect tobacco. He artificially infected eggplant, peppers, tomato, squash, watermelon, and cucumber as well as species of Trifolium, Medicago, and Melilotus. Walker and McInroy (PHYTOPATHOLOGY 35: 598 (1945)) infected Phytolacca semidecandra, Geranium sp., Begonia sp., tomato, and potato. Cronin (RAM 39: 46) found isolations from legumes to have similar host ranges to those from tobacco. Debbagh also showed that a wide range of Nicotiana spp. could be attacked. Some species are reported as resistant by McGrew (PLANT DIS. REPTR. 40: 908 (1956)).

Seed Transmission

Böning (1932 - PRAKT BLATT. PFLANZENB. V. PFLANZENSCH 10: 253) demonstrated transmission by seed and this was confirmed by Bates (RAM 39: 211) Whereas Böning found seed could be disinfected by soaking in silver nitrate at 1/400 for 30 minutes, Bates reported a 1/1000 solution was inadequate.

Tsumagari (1952 - KAGOSHIMA TOBACCO EXP. STA. BULL 7) reported transmission on debris carried with seed. Walker & McInroy (PHYTOPATHOLOGY 35: 598 (1945)) state they believe infection to be carried on seed, but give no data.

In America, although seed transmission appears to be accepted, little importance seems to be attached to it as a method of initiation of an attack, which appears to be generally considered as dependent on persistence on debris and on spread from other plants growing in the vicinity of the seed-beds. On the other hand, seed transmission has been stressed in Africa, especially as regards the spread from one locality to another.

Measures to reduce the spread of the disease in Africa

There appears to be no doubt that the disease is seed-borne, but in view of the American work perhaps more attention might be paid to the possibility of plants other than tobacco playing a role in initiation of an attack and in its spread from locality to locality.

In view of the expanding, though somewhat sporadic, occurrence of the disease, the risk of obtaining infected seed could only be reduced by ensuring that it came from a locality in which the disease was not present.

There is insufficient knowledge at the moment about the reliability of seed disinfection, and before any useful recommendation can be made, it appears that an effective method remains to be discovered. It is possible that infection lies within the seed tissues and would therefore be difficult to deal with.

In areas so far free of the disease it would seem advisable to rely as far as possible on locally grown seed. Disinfection of seed received from other areas would appear to entail some risk.

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MAURITIUS

Bacterial wilt of ginger in Mauritius

On 20 February, 1952 diseased ginger plants were received for examination from Crève-Coeur in Pamplemousses district.

The leaves of the affected plants change in colour to various shades of yellow and finally to an uneven dark brown, the changes being first to a mottling of lime green and citron green, then to ochraceous-buff and light ochraceous-salmon and finally to about snuff brown (Ridgway). The leaves also roll up from the tip downwards along their margins. As the disease progresses, the sheaths show longitudinally-elongated water-soaked patches externally, whilst internally, the stele and cortex show similar patches, in which cavities may develop. The stele itself turns light brown, the whole interior becoming water-soaked in appearance. Badly affected rhizomes also appear water-soaked externally and ultimately stems and sheaths ooze a white to dirty-white gum, which is abundant in advanced stages.

Cultures yielded a white bacterium which was inoculated into young tomato plants. A week later, the plants were wilting and showing reflexed leaves, blackening about the inoculated centres and development of incipient roots above and below these regions. White gum ooze was produced from cut surfaces of the stems. The disease was therefore attributed to the bacterial wilt organism, Pseudomonas solanacearum (Smith) Dowson.

This diagnosis was confirmed by the Commonwealth Mycological Institute. Dr. W. J. Dowson studied the culture and reported that the isolate of P. solanacearum differed from others in that it formed a marked pigment on certain media: black on meat-infusion agar and orange-brown on yeastrel dextrose agar. The usual brown pigment diffused into the latter agar; but the growths themselves were brown. This marked pigment formation might be due to the host from which it was isolated.

This disease should not be confounded with a blight of ginger, probably also bacterial, occurring as a yellowing and drying of the leaves along the margins, but in which gum ooze from cut surfaces of the stem and rhizome is absent.

WANTED BY F.A.O.

The Food & Agriculture Organization is looking for competent plant pathologists to serve on the following projects:

TANGANYIKA - Coffee leaf fall disease of unknown origin. The project is to commence as soon as possible and is included for the whole year of 1962 (subject to further extension).

CHILE - Virus diseases of vegetables, especially potato viruses. The incumbent of this post should have experience in the production and multiplication of certified seed potatoes. Twelve months, to commence as soon as possible.

U.A.R. (Egypt) - Citrus virus diseases. Twelve months, commencing as soon as possible.

- Fusarium wilt disease of cotton. Twelve months, commencing as soon as possible.

JAMAICA - Obscure diseases of coconut palm. Twelve months, commencing January 1962.

These posts will not remain vacant for very long. Anyone interested should apply for particulars to Dr. Lee Ling, Crop Protection Branch, Plant Production and Protection Division, F.A.O., Viale delle Terme di Caracalla, Rome, Italy.

Commonwealth Mycological Institute

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